

A process and apparatus for testing material libraries, in particular catalysts, by means of coupled use of at least two analytical methods, preferably IR thermography and mass spectrometry. Owing to the selected arrangement, the disadvantages of the two previously known individual methods are compensated for: the subsequent selectivity determination for selected sections by means of mass spectrometry invalidates the argument against IR thermography, of only being able to determine activities; the rapid integrated determination of potentially "good" materials via IR thermography prevents an excessive loss of time by needing to test all materials of a library successively with the mass spectrometer. The reactor design permits, firstly, the integral recording of the entire reactor through a window which is transparent for the corresponding method and, secondly, permits the simultaneous, automated application of a second analytical method (for example mass spectrometry) to selected materials of a material library, which have been rated as active by the optical method. In the case described, the optical method provides information on the material activity for a set problem, and the second analytical method determines the selectivity of the materials.